Grand Canyon National Park
Progress Report December 2002

Mountain Lion Activity Monitoring

Throughout Spring and Summer 2003, we conducted hair sampling, track surveys, and remote camera surveillance of mountain lions at Grand Canyon National Park. We focused mainly on areas adjacent to the developed zone of the South Rim. The sampling and surveys were a continuation of a mountain lion DNA project initiated in the year 2000.

Several sets of mountain lion tracks were positively identified throughout monitored portions of the park. One mountain lion photo was obtained through the use of an infrared remote camera station. Several mountain lion caches and scrapes were positively identified.

The results of these surveys contributed to our decisions when selecting areas in which to attempt to trap and collar mountain lions, based on knowledge of habitat use patterns and mountain lion occurence.

Mountain Lion Capture Study

In late July we began assembling traps and delineating priority areas for capture of mountain lions in Grand Canyon National Park. Trapping staff included Elaine Leslie, Emily Garding, Zach Kincaid, and Eric York. Snare assemblies were comprised of Aldrich foot snares modified to minimize injuries to captured lions and to reduce potential for capture of non-target species. In early August we began setting out traps in selected areas that were were checked twice a day, once in the early morning and again in the afternoon. Between the morning and afternoon checks, more track and sign surveys were conducted throughout the South Rim. We progressively set out traps until we reached our maximum output of 30 traps.

The first factor determining our trap site locations was the identification of previous or current lion sign. Priority locations were areas where we positively identified lion tracks, scrapes or kills. The second factor was proximity to areas where such sign had been identified. We set traps on trails and in drainages that led to or away from areas where lion sign was found. The trap locations were limited by exposure to the sun and availability of trees or rocks deemed large enough to anchor the traps. We selected trap sites also based on minimizing injury to captured pumas and risk to non-target animals. Many of our trap sites were located in drainages which lions commonly use for travel. Others were located on major game trails. Due to the relative openness of the vegetation in this part of the park and the abundance of major elk trails, it was impossible to cover all entryways leading to areas of known lion use.

On August 31st we closed down all of the traps.

During this capture period, we had 0 captures in 872 trapnights. A trapnight is defined as one trap open for one night. By comparison, in the Santa Monica Mountains in California, Eric York had his first capture (P1) on the 1186th trapnight. However, the following two captures required only a few trapnights upon location of fresh lion sign.

One factor that contributed significantly to the results of the capture effort is a severe shift in weather patterns. Most of the sign detected on the South Rim was discovered prior to the arrival of the monsoonal rains, whereas the trapping was initiated after the rains began. We believe the availability of water from the rains was an important factor resulting in the lions' sudden shift in habitat use on the South Rim.

Another item of note is that there were two lion mortalities in or very near the park during the trapping period due to collisions with motor vehicles

The second trapping period began in late October. Trapping took place from October 29th to November 22nd. During this period we had one successful capture of a lion.

Sign surveys again contributed to the selection of trapping areas.

In order to expand the trapping area into more than one animal's home range, we spread trap sites out along the rim as far east as Tusayan Ruins. Tracks and sign continued to be identified intermittently during the trapping period.

On November 9th a young male lion was captured in a snare that was chained to a large Ponderosa Pine along a major game trail in this area. Emily Garding and Eric York anesthetized, collared, and released the animal, labeled P1 (Puma One).

P1 was delivered the chemical immobilizing agent via a blowdart mechanism. The delivery was sucessful and the animal was uninjured. P1 did suffer a swollen foot as is common with the use of foot-hold snares, however the injury was slight and he recovered quickly as indicated by his tracks, identified on November 14th with no swelling evident.

Measurements indicated that P1 weighed roughly 117 pounds and his vitals appeared to be normal.

On November 19th and 20th we received the first scheduled data downloads from the GPS collar affixed to P1. The first download was incomplete, possibly because P1 was moving at the time of the download which can interfere with the reception of the data. We opportunistically triggered a second download with the remote data download activator. The second download contained more GPS points and was considered complete.

As of this time, it appears that both the VHF and GPS functions of the collar seem to be working properly. Also, both the scheduled downloads and the remote downloading device appear to be functioning properly.

We received a total of 68 GPS points over a period during which the collar was scheduled to attempt 123 GPS points. The collar shows a success rate of 55% at this time which is higher in comparison to the success rates of the GPS collars being used on mountain lions both at the Santa Monica National Recreation Areas and mountain lion research being conducted by USGS in the Flagstaff Area.